OCR
RECOGNISING ACHIEVEMENT

ADVANCED SUBSIDIARY GCE UNIT   **2506**

COMPUTING

Introductory Computer Systems, Communications and Software

TUESDAY 22 MAY 2007   Morning

Time: 1 hour 30 minutes

No additional materials are required.

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and Candidate number in the boxes above.
- Answer **all** the questions.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- If you run out of space for an answer, continue on the spare pages at the back of the booklet.
- Do **not** write in the bar code.
- Do **not** write outside the box bordering each page.
- WRITE YOUR ANSWER TO EACH QUESTION IN THE SPACE PROVIDED. ANSWERS WRITTEN ELSEWHERE WILL NOT BE MARKED.

INFORMATION FOR CANDIDATES

- The number of marks for each question is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is 90 (86 + 4 for the quality of written communication).
- You will be awarded marks for the quality of written communication where an answer requires a piece of extended writing.
- No marks will be awarded for using brand names of software packages or hardware.

For Examiner's Use		
Question no.	Max. mark	Mark
1	4	
2	6	
3	6	
4	12	
5	7	
6	6	
7	11	
8	14	
9	8	
10	6	
11	6	
WC	4	
Total	90	

This document consists of **14** printed pages and **2** lined pages.

Answer **all** questions.

1 **(a)** State what is meant by the following in a computer system.

    (i) input device ....

       .... [1]

    (ii) output device ....

       .... [1]

(b) Give **two** reasons why backing storage is needed on most computer systems.

    1 ....

    ....

    2 ....

    .... [2]

2 **(a)** Describe the difference between RAM and ROM.

    ....

    ....

    ....

    .... [2]

(b) State **two** items stored in the RAM of a personal computer system.

    1 ....

    ....

    2 ....

    .... [2]

(c) Give **one** advantage and **one** disadvantage of storing the operating system in ROM.

    Advantage ....

    ....

    Disadvantage ....

    .... [2]

3 **(a)** State **three** tasks of an operating system in a stand-alone computer.

1 ....

....

2 ....

....

3 ....

.... [3]

(b) Explain why a multi-tasking operating system is suitable for producing a report using data held on a stand-alone computer.

....

....

....

....

....

.... [3]

[Turn over

4 A company keeps a file of customer orders.

(a) For each of the following fields, state the data type that would be used, giving a reason for your answer.

  (i) Number of items ordered

  Data type ....

  Reason ....

  .... [2]

  (ii) Whether a discount is available or not

  Data type ....

  Reason ....

  .... [2]

  (iii) Value of the order

  Data type ....

  Reason ....

  .... [2]

(b) The company makes regular back-ups of the file and also archives data.

  (i) Describe a suitable back-up routine for the company.

  ....

  ....

  ....

  ....

  ....

  .... [3]

  (ii) State what is meant by archiving data.

  ....

  .... [1]

   (iii) Explain why the company archives data.

   ....

   ....

   ....

   .... [2]

5 **(a)** Describe the following software utilities used when transmitting data.

   (i) Compression ....

   ....

   ....

   .... [2]

   (ii) Error checking ....

   ....

   ....

   .... [2]

   (b) Explain why compression **and** error checking are necessary when a video clip is being broadcast across a network.

   ....

   ....

   ....

   ....

   ....

   .... [3]

[Turn over

6 A procedure has been written which will accept any two numbers and output the larger.

Give **three** different sets of data which could be used to test the procedure and give a reason for each.

Test data 1 ....

Reason ....

.... [2]

Test data 2 ....

Reason ....

.... [2]

Test data 3 ....

Reason ....

.... [2]

7 A company holds a personnel file. Records are accessed by using a 6 digit key.

(a) Explain the meaning of a key field.

....

....

.... [2]

(b) The key field can be used to access records.

Describe how access to records is achieved by using

(i) an index ....

....

....

.... [2]

(ii) a hashing algorithm ....

....

....

.... [2]

(c) (i) State what is meant by a collision when using a hashing algorithm to access data.

....

.... [1]

(ii) Describe **two** methods for dealing with collisions when using a hashing algorithm to store data.

Method 1 ....

....

....

.... [2]

Method 2 ....

....

....

.... [2]

[Turn over

8 A computer system is supplied with a hard disk drive and a DVD rewritable drive.

(a) State **two** types of data that will be stored on a

  (i) hard disk ....

  ....

  ....

  .... [2]

  (ii) DVD ....

  ....

  ....

  .... [2]

(b) State **one** other backing storage device which the owner of the system might buy. Give a reason why the device you have chosen would be useful.

  Device ....

  Reason ....

  ....

  .... [2]

(c) When data is transferred from main memory to the hard disk drive, parallel data transmission is used.

    (i) State what is meant by parallel data transmission and give a reason why it would be used in this case.

        Parallel data transmission ....

        ....

        Reason ....

        .... [2]

    (ii) During the process of transferring the data to the hard disk drive, interrupts are used.

        Describe what interrupts are and explain how they are used in this case.

        Description ....

        ....

        ....

        .... [2]

        Explanation ....

        ....

        ....

        ....

        .... [2]

    (iii) Explain why half duplex data transmission is used in this case.

        ....

        ....

        ....

        .... [2]

                                                                  [Turn over

9 (a) Two network topologies are considered, a bus topology and a star topology.

Describe the topologies and give **one** advantage of each. (You may use diagrams as part of your answer.)

(i) bus topology

....

....

....

.... [2]

Advantage ....

.... [1]

(ii) star topology

....

....

....

.... [2]

Advantage ....

.... [1]

(b) Communication interfaces are necessary for communication to be successful across a network. Explain why communication interfaces are organised in a layered fashion.

....

....

....

.... [2]

10 Describe the purpose of the following parts of a processor.

Control unit ....

....

....

.... [2]

Memory unit ....

....

....

.... [2]

Arithmetic logic unit ....

....

....

.... [2]

[Turn over

11

```
MODULE 1                        MODULE 2
INPUT X                         INPUT X
WHILE X IS NOT 1 DO             REPEAT
   A=5                             A=5
   IF X=2 THEN                     IF X=2 THEN
      X=3                             X=3
   ELSE                            ELSE
      X=1                             X=1
   ENDIF                           ENDIF
   OUTPUT A AND X                  OUTPUT A AND X
ENDWHILE                        UNTIL X=1
OUTPUT X                        OUTPUT X
```

(a) Write down the outputs from each of the modules above, if the initial value of X is 1.

OUTPUT from MODULE 1 ....

.... [2]

OUTPUT from MODULE 2 ....

.... [2]

(b) Explain the difference between a WHILE…ENDWHILE loop and a REPEAT…UNTIL loop.

....

....

....

.... [2]

If you use these lined pages to complete the answer to any question, the question number **must** be clearly shown.

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[Turn over

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